2018 Spring Electrofishing (SEII) Summary Report

Shawano Lake (WBIC 322800) and Washington Lake (WBIC 323700)

Shawano County

Introduction and Survey Objectives

In 2018, the Department of Natural Resources conducted a one night electrofishing survey of Shawano and Washington Lakes in order to provide insight and direction for the future fisheries management of these water bodies. Primary sampling objectives of this survey were to characterize species composition, relative abundance, and size structure. The following report is a brief summary of that survey including the general status of the fish populations and future management options for Shawano Lake and Washington Lake.

Combined Acres: 6,290 Combined Shoreline Miles: 19.78 Combined Maximum Depth (feet): 42
Lake Type: Both = Drainage Public Access: 7 Public Boat Launches
Regulations for both waterbodies: Walleye (Bag limit of 3, 18" minimum) All other species Statewide Default Regulations.

WISCONSIN DNR CONTACT INFO.

Jason Breeggemann - Fisheries Biologist
Elliot Hoffman - Fisheries Technician
Wisconsin Dept. of Natural Resources
647 Lakeland Rd.
Shawano, WI 54166

Jason Breeggemann: 920-420-4619
jason.breeggemann@wisconsin.gov

Elliot Hoffman: 920-420-9581
elliot.hoffman@wisconsin.gov

Survey Information							
Site Location	Survey Date	Water Temperature (°F)	Target Species	Total Miles Shocked	Number of Stations	Gear	Number of Netters
Shawano Lake and Washington Lake	5/22/2018	68	All	8	8	2x Boomshocker	4

Survey Method

- Shawano Lake and Washington Lake were sampled according to spring electrofishing (SEII) protocols as outlined in the statewide lake assessment plan. The primary objective for this sampling period was to count and measure adult largemouth bass and panfish. Other gamefish and panfish may be sampled but are considered by-catch as part of this survey.
- Eight miles were electrofished. All fish captured were identified to species and gamefish and panfish were measured for length.
- Fish metrics used to describe fish populations include proportional stock density, catch per unit effort, length frequency distributions, and mean ages at lengths.

Fish Metric Descriptions
PSD, CPUE, LFD, and Mean Age at Length

Proportional Stock Density (PSD) is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For electrofishing surveys, we typically quantify CPUE by the number and size of fish per mile of shoreline. CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Length frequency distribution (LFD) is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Calcified structures (e.g., otoliths) are collected from a specified length bin of interest (e.g., 13.5 - 14.4 inches for largemouth bass). Mean age is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Size Structure Metrics									
Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
Black Crappie	6	7.9	5.9 - 10.4	5.0 and 8.0	6	2	33	50th	Moderate
Bluegill	180	4.8	2.6 - 7.8	3.0 and 6.0	170	35	21	40th	Moderate
Largemouth Bass	105	12.2	6.6 - 19.8	8.0 and 12.0	100	52	52	48th	Moderate
Pumpkinseed	65	5.5	2.9 - 8.2	3.0 and 6.0	64	26	41	68th	Moderate
Yellow Perch	56	5.3	3.5 - 8.5	5.0 and 8.0	28	3	11	65th	Moderate

Abundance Metrics							
Species	CPUE Total (No. per mile)	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
Black Crappie	3.0	33rd	Low - Moderate	≥ 8.0 inches	1.0	33rd	Low - Moderate
Bluegill	90.0	51st	Moderate	≥ 7.0 inches	2.5	36th	Low - Moderate
Largemouth Bass	13.1	49th	Moderate	≥ 14.0 inches	3.9	60th	Moderate
Pumpkinseed	32.5	87th	Moderate - High	≥ 7.0 inches	2.5	81st	Moderate - High
Yellow Perch	28.0	77th	Moderate - High	≥ 8.0 inches	1.5	79th	Moderate - High

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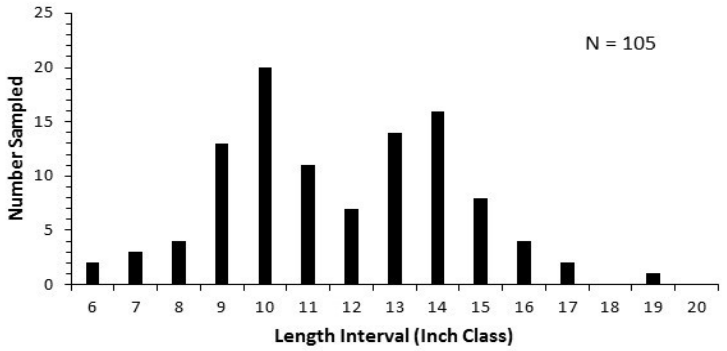
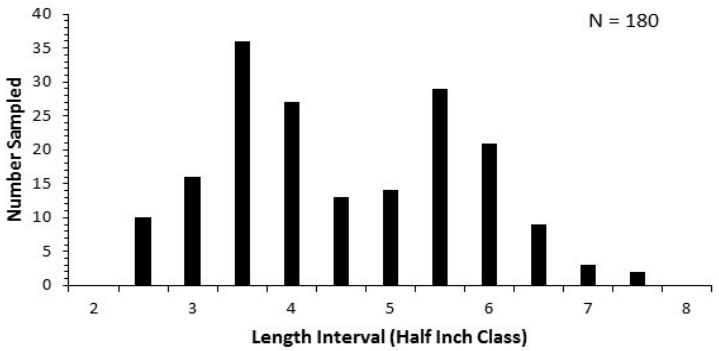
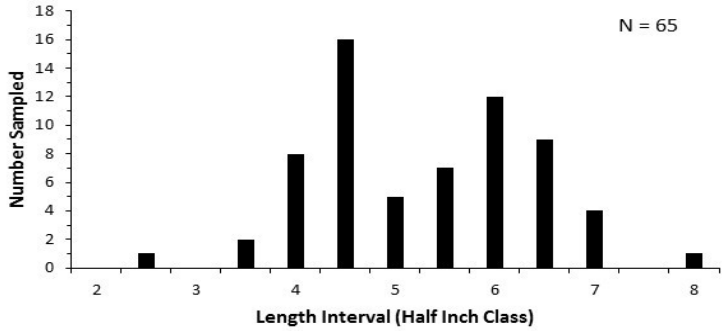
Largemouth Bass Length Distribution



Bluegill Length Distribution



Pumpkinseed Length Distribution



Abundance (CPUE) Trends

Species	Historical Median (2006 - 2018)	CPUE (No. per mile)			
		2006	2010	2014	2018
Black Crappie	5.0	35.3	7.0	0.5	3.0
Bluegill	97.8	134.7	81.5	105.5	90.0
Largemouth Bass	17.9	40.7	20.8	15.1	13.1
Pumpkinseed	28.75	22.0	27.0	30.5	32.5
Yellow Perch	20.9	17.3	10.5	24.5	28.0

Size Structure (PSD) Trends

Species	Stock and Quality Size (Inches)	Historical Median (2006 - 2018)	2006	2010	2014	2018
Black Crappie	5.0 and 8.0	31	69	29	0	33
Bluegill	3.0 and 6.0	32	33	30	36	21
Largemouth Bass	8.0 and 12.0	69	88	72	67	52
Pumpkinseed	3.0 and 6.0	61	64	57	67	41
Yellow Perch	5.0 and 8.0	5	33	0	0	11

Growth Metrics - 2018

Species	Total	Length Bin	Mean Age and Range	Percentile Rank	Growth Rating
Largemouth Bass	4	11.50 - 12.49	3.8 (3 - 5)	80th	Fast
Largemouth Bass	10	13.50 - 14.49	5.9 (5 - 6)	91st	Fast

Summary

- A total of 522 fish from 14 different species were captured in the electrofishing survey. The most frequently encountered and common species were bluegill (180), largemouth bass (105), pumpkinseed (65), and yellow perch (56).
- Other species sampled in lower abundance include brown bullhead (30), yellow bullhead (24), walleye (18), rock bass (13), lake chubsucker (11), black crappie (6), golden shiner (6), northern pike (5), common carp (2), and bowfin (1).
- One invasive species (common carp) and one species of greatest conservation need (lake chubsucker) were captured in our survey.
- Largemouth bass were the dominant gamefish captured in our survey. Although largemouth bass densities have been declining over the last 15 years, densities were still found at moderate levels. Largemouth bass size structure was also found at moderate levels with a PSD of 52 and just under 4 largemouth bass ≥ 14.0 inches captured per mile of electrofishing. Largemouth bass growth rates were fast, likely driven by the abundant forage available in the lake.
- Bluegill, pumpkinseed, and yellow perch were the dominant panfish species captured in our survey. Densities of all three species were moderate to moderate - high. Bluegill PSD in 2018 was the lowest it had been in the last 15 years. A bluegill PSD of 21 indicates a population dominated by smaller individuals and only 2.5 bluegills ≥ 7.0 inches were captured per mile of electrofishing. Pumpkinseeds showed a little better size structure with a PSD of 41 and 2.5 pumpkinseed ≥ 7.0 inches captured per mile of electrofishing. Good numbers of yellow perch were captured, including some harvestable size fish. It is difficult to draw conclusions regarding the yellow perch fishery because spring electrofishing is not the optimal gear to sample this species.

Management Options

This survey was primarily intended to assess largemouth bass and panfish populations. Other species are captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations are focused on bass and panfish.

Largemouth Bass

- Largemouth bass were found at optimal levels in Shawano Lake and Washington Lake. Densities and size structure were moderate, growth rates were fast, and largemouth bass PSD showed a balanced population.
- No management actions recommended at this time.

Panfish

- Bluegill, pumpkinseed, and yellow perch were all captured in moderate to high densities and size structure was moderate at best for these three species. Slower growth observed from bluegill and black crappie captured in the spring fyke netting survey combined with intense fishing pressure are likely driving the observed trends in size structure.
- Maintain or increase predator densities to prevent panfish numbers from increasing, resulting in additional competition for resources.
- Consider a regulation change to reduce angler harvest and increase the number of quality sized fish panfish in the population.

Other Management Objectives

- Continue to work with WDNR staff and local management organizations to manage invasive aquatic plants as needed. High densities of invasive plants can inhibit the ability of predators to forage resulting in slow growing predator populations and overabundant, stunted panfish populations.